MEMORANDUM
DEPARTMENT OF TRANSPORTATION

DATE September 24, 1973

SUBJECT PIN 7500.34.311, FILD 73-16
I-81, TEST WELLS - JEFFERSON COUNTY

FROM Lyndon H. Moore, Soil Mechanics Bureau, Room 102, Bldg. 7
By: Wesley P. Moody Wesley P. Moody

TO C. J. Lyman, Regional Director of Transportation, Region 7

cc J. Sternbach, Construction Subdivision, Room 404, Bldg. 5
M. D. Graham, Facilities Design Subdivision, Room 405, Bldg. 5
Attention: J. J. Ryan

Enclosed is a copy of a test well report prepared by Arthur Klussendorf, Senior Engineering Geologist, describing work done on the subject project.

The recommendations contained therein will aid the State Architect to design the pumping system.

Please contact this Bureau if you have questions concerning this report.

LHM:EJL:MR
Attachment

#1 - 19' static Level
#2 - 23' static Level

MEMORANDUM
DEPARTMENT OF TRANSPORTATION

DATE September 17, 1973

SUBJECT FILD 73-16
INTERSTATE 505 TEST WELLS FOR PROPOSED COMFORT STATIONS
JEFFERSON COUNTY, PIN 7500.34-311

FROM ARTHUR B. KLUSSENDORF, Senior Engineering Geologist

TO WESLEY P. MOODY, Associate Soils Engineer

On August 16 and 17, 1973 the writer assisted Mr. William Monteith (EIC) in supervising the construction of Test Well No. 6. Wells No. 5 and No. 6 were drilled by order on Contract after Well No. 4 came up dry. Wells No. 1 and No. 2 are located at the NB site and wells No. 3 thru No. 6 are located at the SB site.

Copies of drillers' logs, pump test data and chemical, physical and bacteriological tests are attached. This data has already been forwarded to the State Architect.

Recommendations for location of pump intake and maximum pumping rate for each well are as follows:

Northbound Rest Area

1. Test Well No. 1

   a) Pump Intake - 50 to 75 feet below original ground
   b) Pumping Rate - not to exceed 25 gpm

2. Test Well No. 2

   a) Pump Intake - 50 to 75 feet below original ground
   b) Pumping Rate - not to exceed 25 gpm

Southbound Rest Area

3. Test Well No. 3

   a) Pump Intake - 150 to 175 feet below original ground
   b) Pumping Rate - not to exceed 12 gpm

4. Test Well No. 4

   Abandoned - advised E.I.C. to seal hole

NYSDOT
Library
50 Wolf Road, POD 34
Albany, New York 12232

5. Test Well No. 5

Abandoned - advised E.I.C. to seal hole

6. Test Well No. 6

a) Pump Intake - 150 to 175 feet below original ground
b) Pumping Rate - not to exceed 12 gpm

Care should be exercised that pump intakes not be set deeper, nor pumping rates higher than those recommended because of the possibility of pulling in salt water.

Well No. 1 (NB) should be used as the production well because of the higher chloride content of Well No. 2 (NB). Either Well No. 3 (SB) or Well No. 6 (SB) may be used as the production well with no preference.

If 12 gpm is not sufficient, at the Southbound site, additional development and testing would be required to justify an increase in the pumping rate for these wells.

ABK:vav

TULLY DRILLING COMPANY, INC.

Poyntelle, Pa.

LOG OF WELL

Well No.

Log of Well for New York State Dept. of Transportation Test No. 1

Address Region 7, Watertown, New York

Well Located at Route 81, Northbound in Jefferson County, State of N.Y.

Date Drilling started August 7, 1973 Date Test Hole Completed August 8, 1973

Total depth to bottom of Well 200 feet Diameter Test Hole 10" X 6"

Water stands when not pumping 19 feet inches from the surface of the ground

Thickness of Stratum	Depth To Bottom of Strata	Formation Found Each Stratum	Thickness of Stratum	Depth To Bottom of Strata	Formation Found Each Stratum
18'	0- 18'	Overburden - clay			
10'	18'-28'	White Granite			
18'		10" Temporary Casing			
29'		6" Casing- left in place and Grouted			
113'	28'-141'	White Granite			
59'	141'-200'	Pink - Black Granite			
		Water Veins			
		8G.P.M. @ 46'			
		2G.P.M. @ 60'			
		3G.P.M. @ 74'			
		7G.P.M. @ 148'			
		40G.P.M. @ 183'			

Remarks and opinion of Test

Well developed by air from drill to 60 G.P.M.

CHECK TYPE OF RIG USED: Reverse Rotary / ~~Cable Tool~~ / Wash / Other?

Frank Matarese Jr.

Driller

EXHIBIT NO. II

Record of well pumping test

CONTRACT NO. FILD 73-16. Sheet No. 1 of 2

Date August 25, 1973

OWNER NYS Dept. Of Transportation, Region 7, Watertown, N.Y.
(Name and Address)

WELL NO. 1 LOCATION Route 81-Northbound, Jefferson County.

TEST DATA:

PERFORMED BY: Tully Drilling Co., Inc.

DATE STARTED: 8/13/73 DATE ENDED 8/14/73 PERIOD 24 HOURS

WELL DATA:

TYPE: Drilled Water Well Completed in Rock

TOTAL DEPTH: 200 FEET DIAMETER 6"

DESCRIBE WELL CASING: 18'-10" Casing, 29'-6" Casing Grouted in Rock

ELEVATION TOP OF CASING OR OTHER REFRENCE POINT 2' Above Grade

STATIC WATER LEVEL (BELOW REF. PT.): 19 feet

REMARKS: One Foot of Casing installed after Pump Test.

PUMPING EQUIPMENT:

TYPE OF TEST PUMP: 5 HP, 220 Volt, 3 Phase Red Jacket Submersible Pump w/30 KW Cat. Generator

CAPACITY: 65 GPM TDH: 450 FEET

OVERALL PUMP SETTING: 175 feet

HOW WAS FLOW OF WATER MEASURED? 3" Discharge Pipe with 1 3/4" Orifice

HOW WAS WATER LEVEL DETERMINED? Electric Probe

LENGTH OF WATER LEVEL DETECTOR TUBE: none

REMARKS: Water Samples taken for Complete Analysis

SUBMITTED BY: _____ TITLE Vice Pres.

RECORD OF WELL DRILLING CO.

TULLY DRILLING CO., INC.

Sheet No. 2 of 2 .

Date August 25, 1973

OWNER: NYS Dept. of Transportation, Region 7, Watertown, N.Y.
(Name and Address)

WELL NO. 1 LOCATION: Route 81-Northbound, Jefferson County.

TEST RESULTS:

TIME	GPM	WATER LEVEL (Feet Below Ref.Pt.)	DRAWDOWN (Feet)	WATER
3:25 PM		19'	Static Level	
3:27	64	21'	2 ft.	Clear
3:40	64	23'	4 ft.	"
4:00	64	24'	5 ft.	"
4:25	64	25'	6 ft.	"
5:30	64	26'	7 ft.	"
6:30	64	26.5'	7.5 ft.	"
7:00	64	27'	8 ft.	"
8:00	64	27'	8 ft.	"
9:00	64	27'	8 ft.	"
10:00	64	27'	8 ft.	"
11:00	64	27'	8 ft.	"
12:00 M	64	27'	8 ft.	"
1:00 AM	64	27'	8 ft.	"
2:00	64	27'	8 ft.	"
3:00	64	27'	8 ft.	"
4:00	64	27'	8 ft.	"
5:00	64	27'	8 ft.	"
6:00	64	27'	8 ft.	"
7:00	64	27'	8 ft.	"
8:00	64	27'	8 ft.	"
9:00	64	27'	8 ft.	"
10:00	64	27'	8 ft.	"
11:00	64	27'	8 ft.	"
12:00 N	64	27'	8 ft.	"
1:00 PM	64	27'	8 ft.	"
2:00	64	27'	8 ft.	"
3:00	64	27'	8 ft.	"
3:30	64	27'	8 ft.	"
RECOVERY: 1 min.		23'		
5 "		19'	Static Level	

49 ALLENDALE ROAD
BINGHAMTON, N. Y. 13903
722 - 0030

COSTELLO'S LABORATORY INC.

SUCCESSOR TO NELSON & LAUDER
CHARLES V. COSTELLO
CONSULTING SANITARY CHEMIST

LABORATORY FOR
SANITARY & ANALYTICAL
CHEMISTRY

RESULTS OF EXAMINATION OF WATER

LABORATORY NO. C 13/74 COLLECTED BY Tully Drilling Co.

DATE COLLECTED 8/15/73 RECEIVED 8/15/73 REPORTED 8/20/73

PLACE Watertown N. Y. COUNTY
(CITY, TOWN, VILLAGE OR HAMLET)

SAMPLING POINT Well # 1 Contract # 73-16

OWNER TENANT

BACTERIAL EXAMINATION

TEST FOR COLIFORM GROUP

BACTERIA PER ML. AGAR. 35oC - 24 HRS. M. P. N. * / 100 ML

THIS WATER WAS OF A SATISFACTORY SANITARY QUALITY WHEN THE SAMPLE WAS COLLECTED

PHYSICAL EXAMINATION

COLOR 1 TURBIDITY 3 ODOR + COLD Veg. + HOT

CHEMICAL EXAMINATION RESULTS IN PARTS PER MILLION

IRON (Fe)	.06	NITROGEN CONSTITUENTS	AMMONIA FREE (AS N)	OXYGEN CONSUMED (O)	
MANGANESE (Mn)	Neg.		ALB. AMMONIA (AS N)	CHLORIDES (Cl)	10
CARBON DIOXIDE (CO_2) as Rec'd	5.0		NITRITES (AS N)	TOTAL HARDNESS (AS $CaCO_3$)	245
FLOURIDES (F)			NITRATES (AS N) .06	ALKALINITY (AS $CaCO_3$)	229
TOTAL SOLIDS	344		LOSS OF IGNITION	CALCIUM (AS $CaCO_3$)	185
BICARBONATES			SULFATES 42	MAGNESIUM (AS $CaCO_3$)	60
SILICA			COPPER	ELECTROMETRIC PH VALUE	7.2
TOTAL PHOSPHATES			ORTHO PHOSPHATES	META PHOSPHATES	
SUSPENDED MATTER			TEMPT AIR ° F	TEMPT WATER °F	
DETERGENTS					

REMARKS:

* MOST PROBABLE NUMBER

+1=VERY SLIGHT, 2=SLIGHT, 3=DISTINCT, 4=DECIDED, 5=EXTREME

CHARLES V. COSTELLO

Costello's Laboratory, Inc.
Charles V. Costello
Consulting Chemist

30 Allendale Road
Binghamton, N. Y. 13903
Phone: (607) 722-0030

RESULTS OF EXAMINATION OF WATER

LAB NO. 469/73

COLLECTED BY Tully Drilling Co.

DATE COLLECTED 8/14/73

DATE REPORTED 8/18/73

NAME OF SUPPLY Well Supply

OWNER'S NAME NYSDOT Contract 73-16

ADDRESS Watertown N. Y.

SAMPLING POINT Test Pump Discharge

BACTERIA PER ML 160

(AGAR PLATE COUNT AT 35°)

COLIFORM GROUP Negative

MPN NO/100 ML less than 2.2 OK

THE RESULTS INDICATE THAT THE WATER WAS OF A SATISFACTORY SANITARY QUALITY WHEN THE SAMPLE WAS COLLECTED.

REMARKS:

Charles V. Costello

TULLY DRILLING COMPANY, INC.

Syracuse, N.Y.

LOG OF WELL

Well No.

Log of Well for [illegible] Test No. 2

Address [illegible]

Well Located at Route #1, Lorraine in Jefferson County, State of N.Y.

Date Drilling started August 8, 1973 Date Test Hole Completed August 9, 1973

Total depth to bottom of Well 99' Diameter Test Hole 6"

Water stands when not pumping 23 feet inches from the surface of the ground

Thickness of Stratum	Depth To Bottom of Strata	Formation Found Each Stratum	Thickness of Stratum	Depth To Bottom of Strata	Formation Found Each Stratum
24'	0-24'	Overburden - Clay and Sand			
1'	24'-25'	White Granite			
25'		6" Well Casing			
74'	25'-99'	White Granite			
		Water Veins			
		15G.P.M. @ 40'			
		70G.P.M. @ 80'			

Remarks and opinion of Test

Well developed by air from drill to 75 G.P.M.

CHECK TYPE OF RIG USED: Reverse Rotary, Cable Tool, Wash, Other?

Frank Materese Jr.

Driller

Record of well pumping test

CONTRACT NO. FILD 73-16 Sheet No. 1 of 2

Date August 25, 1973

OWNER NYS Dept. Of Transportation, Region 7, Watertown, N.Y.
(Name and Address)

WELL NO. 2 LOCATION Route 81-Northbound, Jefferson County.

TEST DATA:

PERFORMED BY: Tully Drilling Co., Inc.

DATE STARTED: 8/14/73 DATE ENDED 8/15/73 PERIOD 24 HOURS

WELL DATA:

TYPE: Drilled Water Well Completed in Rock

TOTAL DEPTH: 99 FEET DIAMETER 6"

DESCRIBE WELL CASING: 25'-6" Casing Driven one foot in Rock.

ELEVATION TOP OF CASING OR OTHER REFRENCE POINT 2' Above Grade

STATIC WATER LEVEL (BELOW REF. PT.): 23 feet

REMARKS: One foot of Casing insulated after Pump Test.

PUMPING EQUIPMENT:

TYPE OF TEST PUMP: 5 HP, 220 Volt, 3 Phase Red Jacket Submersible Pump w/30 KW Cat. Generator.

CAPACITY: 65 GPM TDH: 450 FEET

OVERALL PUMP SETTING: 68 feet

HOW WAS FLOW OF WATER MEASURED? 3" Discharge Pipe with 1 3/4" Orifice.

HOW WAS WATER LEVEL DETERMINED? Electric Probe

LENGTH OF WATER LEVEL DETECTOR TUBE: none

REMARKS: Water Samples taken for Complete Analysis.

SUBMITTED BY: TITLE Vice Pres.

RECORD OF WELL PUMPING TEST

TULLY DRILLING CO., INC.

Sheet No. 2 of 2 .

Date August 25, 1973.

OWNER: NYS Dept. of Transportation, Syracuse, N.Y.
(Name and Address)

WELL NO. 2 LOCATION: Route 81-Northbound, Jefferson County.

TEST RESULTS:

TIME	GPM	WATER LEVEL (Feet Below Ref.Pt.)	DRAWDOWN (Feet)	WATER
4:30 PM		23'	Static Level	
4:32	64	25'	2 ft.	Clear
4:35	64	27'	4 ft.	"
4:45	64	27'	4 ft.	"
5:00	64	27'	4 ft.	"
6:00	64	27'	4 ft.	"
7:00	64	27'	4 ft.	"
8:00	64	27'	4 ft.	"
9:00	64	27'	4 ft.	"
10:00	64	27'	4 ft.	"
11:00	64	27'	4 ft.	"
12:00 M	64	27'	4 ft.	"
1:00 AM	64	27'	4 ft.	"
2:00	64	27'	4 ft.	"
3:00	64	27'	4 ft.	"
4:00	64	27'	4 ft.	"
5:00	64	27'	4 ft.	"
6:00	64	27'	4 ft.	"
7:00	64	27'	4 ft.	"
8:00	64	27'	4 ft.	"
9:00	64	27'	4 ft.	"
10:00	64	27'	4 ft.	"
11:00	64	27'	4 ft.	"
12:00 N	64	27'	4 ft.	"
1:00	64	27'	4 ft.	"
2:00	64	27'	4 ft.	"
3:00	64	27'	4 ft.	"
4:00	64	27'	4 ft.	"
4:30	64	27'	4 ft.	"
RECOVERY: 1 min.		24 ft.		
5 "		23 ft.	Static Level	

30 ALLENDALE ROAD
BINGHAMTON, N. Y. 13903
722 - 0030

COSTELLO'S LABORATORY INC.

SUCCESSOR TO NELSON & LAUDER
CHARLES V. COSTELLO
CONSULTING SANITARY CHEMIST

LABORATORY FOR
SANITARY & ANALYTICAL
CHEMISTRY

RESULTS OF EXAMINATION OF WATER

LABORATORY NO. C 14/74 COLLECTED BY Tully Drilling Co.

DATE COLLECTED 3/15/73 RECEIVED 3/15/73 REPORTED 3/20/73

PLACE Watertown N. Y. COUNTY

(CITY, TOWN, VILLAGE OR HAMLET)

SAMPLING POINT Well # 2 North Bound

OWNER [illegible] TENANT

BACTERIAL EXAMINATION

TEST FOR COLIFORM GROUP

BACTERIA PER ML. AGAR, 35oC - 24 HRS. M. P. N. * / 100 ML

THIS WATER WAS OF A SATISFACTORY SANITARY QUALITY WHEN THE SAMPLE WAS COLLECTED

PHYSICAL EXAMINATION

COLOR 5.0 TURBIDITY 2.0 ODOR + COLD Veg. + HOT

CHEMICAL EXAMINATION — RESULTS IN PARTS PER MILLION

IRON (Fe)	.05	NITROGEN CONSTITUENTS	AMMONIA FREE (AS N)	OXYGEN CONSUMED (O)	
MANGANESE (Mn) as Rec'd	Trace.		ALB. AMMONIA (AS N)	CHLORIDES (Cl)	162
CARBON DIOXIDE (CO_2)	5.0		NITRITES (AS N)	TOTAL HARDNESS (AS $CaCO_3$)	255
FLOURIDES (F)			NITRATES (AS N) .18	ALKALINITY (AS $CaCO_3$)	246
TOTAL SOLIDS	329		LOSS OF IGNITION	CALCIUM (AS $CaCO_3$)	182
BICARBONATES			SULFATES 35	MAGNESIUM (AS $CaCO_3$)	73
SILICA			COPPER	ELECTROMETRIC PH VALUE	7.2
TOTAL PHOSPHATES			ORTHO PHOSPHATES	META PHOSPHATES	
SUSPENDED MATTER			TEMPT AIR ° F	TEMPT WATER °F	
DETERGENTS					

REMARKS:

* MOST PROBABLE NUMBER

+1=VERY SLIGHT, 2=SLIGHT, 3=DISTINCT, 4=DECIDED, 5=EXTREME

CHARLES V. COSTELLO

Costello's Laboratory, Inc.
Charles V. Costello
Consulting Chemist

30 Allendale Road
Binghamton, N.Y. 13903
Phone: (607) 722-0030

RESULTS OF EXAMINATION OF WATER

LAB NO. [illegible]

COLLECTED BY Tully Drilling Company

DATE COLLECTED 8/15/73 - 11:00 AM

DATE REPORTED 8/17/73

NAME OF SUPPLY No. 2 North Bound

OWNER'S NAME New York State Dept. of Transportation

ADDRESS Watertown, New York

SAMPLING POINT New test well

BACTERIA PER ML 2

(AGAR PLATE COUNT AT 35°)

COLIFORM GROUP Negative

MPN NO/100 ML Less than 2.2

THE RESULTS INDICATE THAT THE WATER WAS
OF A SATISFACTORY SANITARY QUALITY WHEN THE SAMPLE WAS COLLECTED.

REMARKS:

Charles V. Costello

TULLY DRILLING COMPANY, INC.

Poyntelle, Pa.

LOG OF WELL

Well No.

g of Well for New York State Dept. of Transportation Test No. # 3

Address Region No. 7 - Watertown, New York

ell Located at Route 81 - Southbound in Jefferson County, State of N.Y.

te Drilling started August 14, 1973 Date Test Hole Completed August 14, 1973

Total depth to bottom of Well 250 Feet Diameter Test Hole 6"

ater stands when not pumping 19 feet inches from the surface of the ground

Thickness of Stratum	Depth To Bottom of Strata	Formation Found Each Stratum	Thickness of Stratum	Depth To Bottom of Strata	Formation Found Each Stratum
78	0- 78'	Overburden - Sand and Clay			
79'		6" Well casing left in place			
87'	78'-165'	Layered Gray Shale and Limestone			
85'	165'-250'	GRAY Limestone			
		Water Veins			
		5 G.P.M. at 91'			
		2 G.P.M. at 114'			
		3 G.P.M. at 164'			

marks and opinion of Test

Well developed by air from drill to yield 10 G.P.M.

CHECK TYPE OF RIG USED — Reverse Rotary, ~~Cable Tool~~, Wash, Other?

Frank Matarese Jr.

Driller

Exhibit No. 11

Record of well pumping test

CONTRACT NO. FILD 73-16 , Sheet No. 1 of 2

Date August 25, 1973

OWNER NYS Dept. of Transportation, Dayton & Watertown, N.Y.
(Name and Address)

WELL NO. 3 LOCATION Route 81-Southbound, Jefferson County.

TEST DATA:

PERFORMED BY: Tully Drilling Co., Inc.

DATE STARTED: 8/16/73 DATE ENDED 8/17/73 PERIOD 24 HOURS

WELL DATA:

TYPE: Drilled Water Well Completed in Rock.

TOTAL DEPTH: 250 FEET DIAMETER 6"

DESCRIBE WELL CASING: 79'-6" Casing Driven one foot in Rock.

ELEVATION TOP OF CASING OR OTHER REFRENCE POINT 2' Above Grade.

STATIC WATER LEVEL (BELOW REF. PT.): 22 feet.

REMARKS: One foot of Casing Installed after Pump Test.

PUMPING EQUIPMENT:

TYPE OF TEST PUMP: 3/4 HP. 220 Volt, 1 Phase Jacuzzi Submersible Pump w/30 KW Cat. Generator.

CAPACITY: 16 GPM TDH: 380 FEET

OVERALL PUMP SETTING: 160 feet.

HOW WAS FLOW OF WATER MEASURED? Water Meter.

HOW WAS WATER LEVEL DETERMINED? Electric Probe.

LENGTH OF WATER LEVEL DETECTOR TUBE: none

REMARKS: Water Samples taken for Complete Analysis.

SUBMITTED BY: _____ TITLE Vice Pres.

RECORD OF WELL PUMPING TEST

TULLY DRILLING CO., INC.

Date August 25, 1973

OWNER: NYS Dept. of Transportation, Main St., Watertown, N.Y.
(Name and Address)

WELL NO. 3 LOCATION: Route 81-Southbound, Jefferson County.

TEST RESULTS:

TIME	GPM	WATER LEVEL (Feet Below Ref. Pt.)	DRAWDOWN (Feet)	WATER
	Meter			
10:00 AM	1352580	20'	Static Level	
10:05	11	33'	13'	Clear
10:10	11	36'	16'	"
10:15	11	40'	20'	"
10:30	11	46'	26'	"
10:45	11	50'	30'	"
11:00	11 1353240	52'	32'	"
11:30	11	54'	34'	"
12:00 N	10.5	56'	36'	"
12:30 PM	10	57'	37'	"
1:00	10 1354485	58'	38'	"
2:00	10	58'	38'	"
3:00	10	59'	39'	"
4:00	10	59'	39'	"
5:00	10	60'	40' *	"
6:00	10 1357488	69'	49' *	"
7:00	10	74'	54' *	"
8:00	10	76'	56' *	"
9:00	10	64'	44' *	"
10:00	10	60'	40'	"
11:00	10	59'	39'	"
12:00 M	10 1361100	59'	39'	"
1:00 AM	10	59'	39'	"
2:00	10	59'	39'	"
3:00	10	59'	39'	"
4:00	10	59'	39'	"
5:00	10	59'	39'	"
6:00	10 1364730	59'	39'	"
7:00	10	59'	39'	"
8:00	10	59'	39'	"
9:00	10	59'	39'	"
10:00	10 1367150	59'	39'	"
RECOVERY: 1 min.		48'		
2 "		44'		
5 "		40'		
15 "		20'		

*NOTE: Water Level Readings taken while No. 6 Well is Drilled through water bearing rock strata.

30 ALLENDALE ROAD
BINGHAMTON, N. Y. 13903
722 - 0030

COSTELLO'S LABORATORY INC.

SUCCESSOR TO NELSON & LAUDER
CHARLES V. COSTELLO
CONSULTING SANITARY CHEMIST

LABORATORY FOR
SANITARY & ANALYTICAL
CHEMISTRY

RESULTS OF EXAMINATION OF WATER

LABORATORY NO. C 15/74 COLLECTED BY Tully Drilling Co.

DATE COLLECTED 8/17/73 RECEIVED 8/17/73 REPORTED 8/20/73

PLACE Watertown N. Y. (CITY, TOWN, VILLAGE OR HAMLET) COUNTY

SAMPLING POINT [illegible]

OWNER [illegible] TENANT

BACTERIAL EXAMINATION

TEST FOR COLIFORM GROUP

BACTERIA PER ML. AGAR, 35oC - 24 HRS. 1

M. P. N. * / 100 ML less than 2.2 OK

THIS WATER WAS _____ OF A SATISFACTORY SANITARY QUALITY WHEN THE SAMPLE WAS COLLECTED

PHYSICAL EXAMINATION

COLOR 2 TURBIDITY 1 ODOR + COLD Veg. + HOT

CHEMICAL EXAMINATION

RESULTS IN PARTS PER MILLION

IRON (Fe)	.08	NITROGEN CONSTITUENTS: AMMONIA FREE (AS N)		OXYGEN CONSUMED (O)	
MANGANESE (Mn)	neg.	ALB. AMMONIA (AS N)		CHLORIDES (Cl)	10
CARBON DIOXIDE (CO_2) as Rec'd	3.0	NITRITES (AS N)		TOTAL HARDNESS (AS $CaCO_3$)	160
FLOURIDES (F)		NITRATES (AS N)	.07	ALKALINITY (AS $CaCO_3$)	151
TOTAL SOLIDS	174	LOSS OF IGNITION		CALCIUM (AS $CaCO_3$)	72
BICARBONATES		SULFATES	22	MAGNESIUM (AS $CaCO_3$)	88
SILICA		COPPER		ELECTROMETRIC pH VALUE	7.35
TOTAL PHOSPHATES		ORTHO PHOSPHATES		META PHOSPHATES	
SUSPENDED MATTER		TEMPT AIR °F		TEMPT WATER °F	
DETERGENTS					

REMARKS:

* MOST PROBABLE NUMBER

+1=VERY SLIGHT, 2=SLIGHT, 3=DISTINCT, 4=DECIDED, 5=EXTREME

CHARLES V. COSTELLO

TULLY DRILLING COMPANY, INC.

Poynette, Wis.

LOG OF WELL

Well No.

g of Well for New York State Dept. of Transportation Test No. 34

Address Region No. 7, Watertown, New York

ll Located at Route 11, Southbound in Jefferson County, State of N.Y.

te Drilling started August 10, 1973 Date Test Hole Completed August 13, 1973

Total depth to bottom of Well 375' Diameter Test Hole 6"

ter stands when not pumping None feet inches from the surface of the ground

Thickness of Stratum	Depth To Bottom of Strata	Formation Found Each Stratum	Thickness of Stratum	Depth To Bottom of Strata	Formation Found Each Stratum
78'	0 -78'	Overburden - Sand			
79'		6" Casing - Left in place			
222'	78'-300'	Limestone			
75'	300'-375'	Limestone - Drilled by Contractor			
	65%	Natural Gas			

narks and opinion of Test

Well doesn't produce any water- Contractor placed concrete plug in well.

HECK TYPE OF RIG USED
Reverse Rotary
~~Cable Tool~~
Wash
Other?

Frank Matarese jr.
Driller

TULLY DRILLING COMPANY, INC.

Pottsville, Pa.

LOG OF WELL

Well No.

Log of Well for New York State Dept. of Transportation Test No. 5

Address Region No. 7, Watertown, N. York

Well Located at Route 81 - Southbound in Jefferson County, State of N.Y.

Date Drilling started August 15, 1973 Date Test Hole Completed August 15, 1973

Total depth to bottom of Well 300 Feet Diameter Test Hole 6"

Water stands when not pumping None feet inches from the surface of the ground

Thickness of Stratum	Depth To Bottom of Strata	Formation Found Each Stratum	Thickness of Stratum	Depth To Bottom of Strata	Formation Found Each Stratum
79	0- 79'	Overburden - Sand and Clay			
80'	79'	6" Well casing left in place			
61'	79'-140'	Layered gray shale and limestone			
140'	140'-280'	Gray limestone			
20'	280'-300'	Gray limestone drilled by contractor			
		Slight gas odor			

Remarks and opinion of Test

No water veins encountered, contractor placed plug in well

CHECK TYPE OF RIG USED: Reverse Rotary, Cable Tool, Wash, Other?

Frank Matarese Jr.

Driller

TULLY DRILLING COMPANY, INC.

Poymene, Pa.

LOG OF WELL

Well No.

og of Well for New York State Dept. of Transportation Test No. 6

Address Region No. 7, Watertown, New York

ell Located at Route 81 - Southbound in Jefferson County, State of N.Y.

te Drilling started August 16, 1973 Date Test Hole Completed August 16, 1973

Total depth to bottom of Well 200 feet Diameter Test Hole 6"

ater stands when not pumping 20 feet inches from the surface of the ground

Thickness of Stratum	Depth To Bottom of Strata	Formation Found Each Stratum	Thickness of Stratum	Depth To Bottom of Strata	Formation Found Each Stratum
77	0- 77'	Overburden - Sand and Clay			
78'		6" well casing left in place			
58'	77'-135'	Layered gray shale and limestone			
65'	135'-200'	Grey limestone			
		Water Veins			
		5 G.P.M. @ 86'			
		4 G.P.M. @ 90'			
		7 G.P.M. @ 116'			
		3 G.P.M. @ 152'			

marks and opinion of Test

Well developed by air from drill to 18 G.P.M.

CHECK TYPE OF RIG USED — Reverse Rotary / Cable Tool / Wash / Other?

Frank Matarese jr.

Driller

EXHIBIT NO. 4A

Record of well pumping test

CONTRACT NO. FILD 73-16 Sheet No. 1 of 2

Date [illegible] 25, 1973

OWNER NYS Dept. of Transportation, Region 7, Watertown, N.Y.
(Name and Address)

WELL NO. 6 LOCATION Route 81-Southbound, Jefferson County.

TEST DATA:

PERFORMED BY: Tully Drilling Co., Inc.

DATE STARTED: 8/20/73 DATE ENDED 8/21/73 PERIOD 24 HOURS

WELL DATA:

TYPE: Drilled Water Well Completed in Rock.

TOTAL DEPTH: 200 FEET DIAMETER 6"

DESCRIBE WELL CASING: 78'-6" Casing Driven one foot in Rock.

ELEVATION TOP OF CASING OR OTHER REFRENCE POINT: [illegible]

STATIC WATER LEVEL (BELOW REF. PT.): 15 feet

REMARKS: One foot of Casing Installed after Pump Test.

PUMPING EQUIPMENT:

TYPE OF TEST PUMP: 5 HP, 220 Volt, 3 Phase Red Jacket Submersible Pump w/30 KW Cat. Generator.

CAPACITY: 65 GPM TDH: 450 FEET

OVERALL PUMP SETTING: 130 feet.

HOW WAS FLOW OF WATER MEASURED? Water Meter.

HOW WAS WATER LEVEL DETERMINED? Electric Probe.

LENGTH OF WATER LEVEL DETECTOR TUBE: none

REMARKS: Water Samples taken for Complete Analysis.

SUBMITTED BY: [illegible] TITLE Vice Pres.

RECORD OF WELL PUMPING TEST

TULLY DRILLING CO., INC.

Sheet No. 2 of 2 .

Date August 25, 1973

OWNER: NYS Dept. of Transportation, Region 7, Watertown, N.Y.
(Name and Address)

WELL NO. 6 LOCATION: Route 81-Southbound, Jefferson County.

TEST RESULTS:

TIME	GPM		WATER LEVEL (Feet Below Ref.Pt.)	DRAWDOWN (Feet)		WATER
12:40 PM	Meter	1367150	16'	Static Level Well 3.*		
12:42	30		50'	34'		Clear
12:45	25		84'	68'	30'	"
1:00	22		103'	87'	38'	"
1:30	22		128'	112'	39'	"
2:00	22		136'	120'	39'	"
2:30	21		143'	127'	39'	"
3:00	21		148'	132'	39'	"
3:30	20		149'	133'	40'	"
4:00	20	1371450	150'	134'	41'	"
4:30	20		150'	134'	41'	"
5:00	20		150'	134'	41'	"
6:00	20	1373240	150'	134'	42'	"
7:00	19		150'	134'	42'	"
8:00	19		150'	134'	42'	"
9:00	19		150'	134'	43'	"
10:00	19		150'	134'	43'	"
11:00	18		150'	134'	43'	"
12:00 M	18	1380000	150'	134'	44'	"
1:00 AM	18		150'	134'	44'	"
2:00	18		150'	134'	44'	"
3:00	18		150'	134'	44'	"
4:00	18		150'	134'	44'	"
5:00	18		150'	134'	44'	"
6:00	18	1387075	150'	134'	44'	"
7:00	18		150'	134'	44'	"
8:00	18		150'	134'	44'	"
9:00	18		150'	134'	44'	"
10:00	18		150'	134'	44'	"
11:00	18		150'	134'	44'	"
12:00 N	18		150'	134'	44'	"
12:45	18	1394970	150'	134'	44'	"
RECOVERY: 1 min.			130'		36'	
5 "			45'		30'	
15 "			26'		21'	
30 "			16'		20'	

*NOTE: Water level noted while pumping No. 6 well.

130 ALLENDALE ROAD
BINGHAMTON, N. Y. 13903
722 - 0030

COSTELLO'S LABORATORY INC.

SUCCESSOR TO NELSON & LAUDER
CHARLES V. COSTELLO
CONSULTING SANITARY CHEMIST

LABORATORY FOR
SANITARY & ANALYTICAL
CHEMISTRY

RESULTS OF EXAMINATION OF WATER

LABORATORY NO. C 18/74 COLLECTED BY Thomas Tully

DATE COLLECTED 8/23/73 RECEIVED 8/23/73 REPORTED 8/25/73

PLACE Watertown N. Y. (CITY, TOWN, VILLAGE OR HAMLET) COUNTY

SAMPLING POINT New Well # 65 B 81 Pump Discharge

OWNER NYSDOT TENANT

BACTERIAL EXAMINATION

TEST FOR COLIFORM GROUP

BACTERIA PER ML. AGAR. 35oC - 24 HRS. 1 M. P. N. * / 100 ML less than 2.2 OK

THIS WATER WAS _____ OF A SATISFACTORY SANITARY QUALITY WHEN THE SAMPLE WAS COLLECTED

PHYSICAL EXAMINATION

COLOR 1.0 TURBIDITY 1.0 ODOR + COLD Veg. + HOT

CHEMICAL EXAMINATION — RESULTS IN PARTS PER MILLION

IRON (Fe)	.04		AMMONIA FREE (AS N)		OXYGEN CONSUMED (O)	
MANGANESE (Mn)	neg.	NITROGEN CONSTITUENTS	ALB. AMMONIA (AS N)		CHLORIDES (Cl)	25
CARBON DIOXIDE (CO_2) as Rec'd	4.0		NITRITES (AS N)		TOTAL HARDNESS (AS $CaCO_3$)	125
FLOURIDES (F)			NITRATES (AS N)	.06	ALKALINITY (AS $CaCO_3$)	154
TOTAL SOLIDS	175		LOSS OF IGNITION		CALCIUM (AS $CaCO_3$)	78
BICARBONATES	134		SULFATES	25	MAGNESIUM (AS $CaCO_3$)	47
SILICA			COPPER		ELECTROMETRIC PH VALUE	7.3
TOTAL PHOSPHATES			ORTHO PHOSPHATES		META PHOSPHATES	
SUSPENDED MATTER	Neg.		TEMPT AIR ° F		TEMPT WATER °F	
DETERGENTS						

REMARKS:

Charles V. Costello

CHARLES V. COSTELLO

* MOST PROBABLE NUMBER

+1=VERY SLIGHT, 2=SLIGHT, 3=DISTINCT, 4=DECIDED, 5=EXTREME

$A = \pi r^2$

$A = \frac{22}{7} \times (.25)^2 = \frac{22}{7}$

.25
.25
125
50
.0625

.0625
16) 1.000

.02464

7.5) .198

.02464 G per FT.

7.5) .198 CF / FT

40.
.02464) 1.00000.
9856
1440

27.5
7.5
1375
550
78.75
60
4,725.00

147
1.47
145.53

1.47
99

01039
LRI